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**APRENDIZAGEM ATIVA NO ENSINO SUPERIOR: ESTRATÉGIAS PEDAGÓGICAS PARA UM TRABALHO COLABORATIVO**  
**ACTIVE LEARNING IN HIGHER EDUCATION: PEDAGOGICAL STRATEGIES FOR COLLABORATIVE WORK**  
**APRENDIZAJE ACTIVO EN LA ENSEÑANZA SUPERIOR: ESTRATEGIAS PEDAGÓGICAS PARA UN TRABAJO COLABORATIVO**

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## RESUMO

**Introdução:** O ensino superior está normalmente associado a uma formação mais tradicional/expositiva que não se enquadra com o atual processo de Bolonha, as características dos jovens estudantes ou as exigências que advêm das constantes transformações da sociedade. Hoje em dia, os estudantes devem estar preparados com um elevado nível de competências sociais e conhecimentos que são necessários num mercado de trabalho que se altera permanentemente.

**Objetivos:** Descrever estratégias de aprendizagem cooperativas, desenvolvidas em grupos, aplicadas em cursos superiores nas áreas das ciências sociais e das ciências da educação.

**Métodos:** A investigação desenvolvida é caracterizada como sendo qualitativa, sendo um estudo essencialmente descritivo, já que apresenta, de forma holística, estratégias específicas aplicadas junto de duas turmas de estudantes do ensino superior.

**Resultados:** A investigação sugere que os estudantes aprendem melhor quando estão ativamente envolvidos em atividades onde o pensamento crítico e criativo é cultivado, resultando em melhores classificações, numa maior satisfação com o seu percurso académico e numa menor probabilidade de abandono.

**Conclusões:** É essencial refletir sobre as práticas pedagógicas e, conseqüentemente, adotar novas estratégias desenvolvidas em ambientes de aprendizagem centrados nos estudantes, que aumentem a qualidade do ensino superior, tornando-o mais adequado à realidade laboral atual.

**Palavras-chave:** aprendizagem ativa; ensino superior; estratégias; trabalho colaborativo

## ABSTRACT

**Introduction:** Higher education is normally associated to a more traditional way of teaching which does not fall within the current Bologna process, the characteristics of young students or the changing demands of our society. Nowadays, students must be prepared with a high-level of social skills and knowledge that is required in a labour market that is in permanent transformation.

**Objectives:** Describe group-based or cooperative learning strategies applied in higher education degrees of social sciences and educational areas.

**Methods:** The developed research is characterized as being a qualitative descriptive study with the aim of overcoming a comprehensive summarization of specific strategies experienced by two groups of higher education students.

**Results:** The research suggests that students learn best when they are actively involved in activities where critical and creative thinking is promoted, resulting in better grades, a higher satisfaction with their academic progress and a lower probability of dropping out.

**Conclusion:** It is essential to reflect on pedagogical practices and consequently adopt new strategies developed in student-centered learning environments that increase the quality of higher education, making it more appropriate for the current reality of the job market.

**Keywords:** active learning; higher education; strategies; collaborative work

## RESUMEN

**Introducción:** La educación superior está normalmente asociada a una formación más tradicional/expositiva que no encaja con el actual proceso de Bolonia, las características de los jóvenes estudiantes o las exigencias derivadas de las constantes transformaciones de la sociedad. Hoy en día, los estudiantes deben estar preparados con un alto nivel de habilidades sociales y conocimientos necesarios en un mercado laboral que cambia constantemente.

**Objetivos:** Describir estrategias de aprendizaje cooperativas, desarrolladas en grupos, aplicadas en cursos superiores en las áreas de las ciencias sociales y de la educación.

**Métodos:** La investigación llevada a cabo destaca por su carácter cualitativo y por ser esencialmente descriptivo, ya que presenta, de forma holística, estrategias específicas aplicadas a dos grupos de estudiantes de enseñanza superior.

**Resultados:** La investigación sugiere que los estudiantes aprenden mejor cuando participan activamente en actividades en las que fomenta el pensamiento crítico y creativo, resultando en mejores clasificaciones, en una mayor satisfacción con su trayectoria académica y en una menor probabilidad de abandono.

**Conclusiones:** Es esencial reflexionar sobre las prácticas pedagógicas y, en consecuencia, adoptar nuevas estrategias desarrolladas en entornos de aprendizaje centrados en los estudiantes, que aumenten la calidad de la enseñanza superior, para que se adecue mejor a la realidad laboral actual.

**Palabras clave:** aprendizaje activo; educación superior; estrategias; trabajo colaborativo

## INTRODUCTION

Higher education is normally associated to a more traditional way of teaching which does not fit with the current Bologna process, the characteristics of young students or the changing demands of our society. Nowadays, students must be prepared with a high-level of social skills and knowledge that is required in a labor market that is in permanent transformation.

Improving the quality and relevance of teaching and learning in higher education must take into account an active endeavor to devise new pedagogical strategies, developed in student-centered learning environments. Active learning is, therefore, understood as "a holistic philosophy for a humanistic vision in higher education, where individuals, groups, institutions, and nations contribute to a global transformation in balance with nature and with respect toward nature as well. Active learning is a transformative process that brings together knowledge artifacts, learning contexts, humans, and social problems as well as challenges for the present and future of our societies" (Misseyyanni, Lytras, Papadopoulou, & Maroul, 2018, pp. XVII-XVIII).

Research suggests that students learn best when they are actively involved in these kind of activities where critical and creative thinking is cultivated, resulting in better grades, a higher satisfaction with their academic period and a lower probability of dropping out (Burke, 2011; Hassanien, 2006). Additionally, research also concludes that employers value graduates that show communication, interpersonal and teamwork skills (Suleman, 2016).

### 1. ACTIVE STRATEGIES FOR COLLABORATIVE WORK

As previously referred, it is undeniable that it is easier to learn through activities that imply the direct involvement of students and that stimulate their cognitive processes, which in the case of Higher Education, should focus particularly on higher complexity levels. The taxonomy of educational objectives, also known as the Bloom Taxonomy, ranks these levels from knowledge (ability to remember specific information and facts) to comprehension (ability to understand and attribute meaning to content), application (ability to use previously learnt contents in concrete situations), analysis (ability to understand the structure of the content, identifying and correlating their elements), synthesis (ability to gather various elements in order to create a whole) and, finally, evaluation (ability to judge knowledge and its value with specific purposes) (Bloom, 1956; Krathwohl, 2002).

Through more simple skills (facts) students are expected to ascend to more elaborate categories (concepts), adopting inductive strategies that are fundamental for the training of competent senior managers who hold a holistic vision that integrates theory and practice.

This process implies the adoption of differentiated strategies that stimulate, facilitate and evaluate students' performance at different levels of knowledge acquisition, followed by alternative methodologies that focus on the student and their involvement throughout the learning process. These include, in addition to other typologies, group activities that seek to stimulate interaction and cooperation in pursuit of a common goal.

The use of group dynamics is adopted as a way of not only placing students physically close and in constant dialogue and interaction but also, and above all, in work where each member feels like a valuable element of the team, who contributes to the achievement of common goals. In other words, a Collaborative/Cooperative learning is expected, which requires students to have a good thought organization, so that when they express themselves they can be understood by everyone, have the ability to question, debate, justify and evaluate their knowledge and their peers', thus contributing to the development of their cognitive structures. This is a powerful tool to foster study habits and social attitudes, requiring application, analysis and synthesis and a high level of depth and abstraction of the knowledge, the highest levels of Bloom's taxonomy (Krathwohl, 2002).

In addition to these cognitive aspects, cooperative learning, based on the Social Interdependence Theory, has, since the late 50s, been proving its efficacy in the development of attitudinal aspects (Yasunaga, 2018), which are equally relevant to the learning process and training of professionals who meet the needs of the organizations where they work.

Johnson, Johnson and Holubec (2002) highlight five base elements of this Cooperative learning. These are:

- Positive Independence, the students have the opportunity to highlight their highest potential in a relationship of interdependence with their peers, establishing relationships of trust;
- Face-to-Face Promotive Interaction, the students take on a proactive attitude, teaching and learning with each other;
- Individual Accountability/Personal Responsibility, each students has two big responsibilities, the responsibility for their own learning and the responsibility for their peers' learning. If one of their peers was unable to reach an objective, the student should question themselves about their influence in this process and reflect on how they can contribute to reverse this tendency;
- Interpersonal and Small-Group Skill, the student should be encouraged to develop interpersonal skills, apart from cognitive skills and knowledge;
- Group Processing, the students are led to carry out a critical analysis of their own words and actions, taking on an active role in deciding on what to keep or discard.

When these elements are known and respected by everyone (students and teachers), there is a common effort to fulfil them, thus, a more active stance in the search for group solutions that contribute to the learning of each one. "Repeatedly experiencing

group activities that contain all of the basic elements of cooperative learning fosters a basic sense of trust, and a supportive environment is formed in which students can speak frankly about any doubts they may harbor and the things that they do not understand. In doing so, they gain a sense of how satisfying it is to attain learning goals while sharing their minds and strengths. Their awareness of the meaning and value of cooperation deepens, and their spirit of cooperation is cultivated" (Yasunaga, 2018, pp. 115-116).

It was by believing in this premise that the elements created by Johnson and his collaborators (2002) served as a base for the implementation of the strategies that are subsequently presented and that were put into practice in classes of the Undergraduate and Master degree courses of the School of Education and Social Sciences (ESECS) of the Polytechnic Institute of Leiria (IPLeiria).

## 2. METHODS

The research developed followed a qualitative method, which assumes the purpose of understanding, in depth, themes, situations or experiences (Edmonds & Kennedy, 2017). In this method, it is common that the researcher monitor events in their natural environment, often becoming a participating observer (Bogdan & Biklen, 2013). It is considered, therefore, that the sensitivity, knowledge and experience of the researcher are relevant elements for the research process, which is more valued than their results (Carmo & Ferreira, 2015).

Since the research was precisely intended to describe, analyse, interpret and understand cooperative or collaborative learning strategies applied in higher education, a case study was developed, which seeks to know, in detail and exhaustively, programs, events, phenomena, activities or individuals who are in real contexts (Clark & Creswell, 2015).

In addition to presenting itself as a case study, the research developed is also descriptive, since narratives were registered to expose the phenomenon under analysis (active learning in higher education) relating to a particular population (higher education students), answering questions such as 'why to do' and 'how to do' (Fortin, 2009).

From the findings that more traditional and expository forms of teaching did not motivate higher education students, we sought, during the first semester of the 2017-2018 school year, to apply more active methodologies and to register, in a logbook, the observations arising from the proceedings. The researcher was, therefore, as Bogdan and Biklen (2013) defend, a participating observer, taking into account that she assumed the dual role of researcher and professor of two Curricular Units taught at the Higher School of Education and Social Sciences of Polytechnic of Leiria - Portugal: Inclusive Literature and Promotion of Reading (2nd year of the Degree in Social Education) and Language Acquisition and Development (3rd year of the Degree in Basic Education), with a total of 57 students.

## 3. RESULTS

### 3.1 General principles

All the implemented strategies, which are described below, have respected a set of basic principles.

From the start, there was an attempt to carry out activities with different types of groups, in terms of number of students (from only two/pairs to the traditional work groups with four or five elements, up to the class group) keeping in mind the participating elements' characteristics. For this purpose, many of the strategies included the random formation of the groups, which reduced the tendency to bring together people with similar competences or the distribution of tasks to be developed according to the abilities that highlight some elements in relation to other colleagues, thus, strengthening the weaker competences of some students (e.g. communication).

In these groups, the teacher has a mediating role and avoids, whenever possible, unnecessary interventions. The intention is to let the groups solve the problems that arise throughout the activities, increasing the students' autonomy. In cases where this intervention was absolutely necessary, the teacher sought to instruct every group at the same time, in other words, to the class, instead of focusing their discourse on specific groups.

Another aspect that was taken into account was the adoption of strategies that required a complexification of the educational objectives and the respective actions to be developed, in hopes that the students moved from the most elementary levels to the higher levels of the Bloom Taxonomy (Krathwohl, 2002), in an inductive logic.

The activities followed the sequence of clarification of the task - thinking alone - thinking together (Yasunaga, 2018), having started with the presentation of a work plan in which the "what, how, and to what extent, namely the purpose and procedures of thinking (clarification of the task)" [since this] encourages independent and active learning activities" (Yasunaga, 2018, p. 117) was defined. This was followed by a moment for individual reflection on the task, so that each student could create their opinion, finding ways to share it with the group, which would also allow them to have a deeper understanding and a better acceptance of the perspectives of co-workers, rather than a linear appropriation of external ideas.

### 3.2 Negotiation of the evaluation

At the beginning of each Curricular Unit, it is common to present the program established for the semester or school year, providing very little flexibility for students, as central elements of the teaching-learning process, to be involved in the decision-

making process that is necessary for the proper functioning of the classes. The student therefore already begins their educational process in a disadvantaged position, where they will have to adapt to the circumstances that the teacher has assumed as more beneficial, in terms of the choice of contents, methodology, adopted procedures and adopted strategies, necessary resources and even the evaluation tools.

Another even more sensitive situation, is the lack of clarity in terms of what is expected from the student, during and after the teaching process, that is, the expectations and objectives set by the teacher, which are often part of the learning evaluation process (Ferraz & Belhot, 2010).

In the specific case of Higher Education, we are talking about students of legal age, many of which already have a degree and professional experience in the areas of the courses they attend.

At this level of education, the current Bologna process also requires a flexibility of the academic path, which naturally includes the evaluation component of the learning achieved.

For the reasons presented, two assessment hypotheses are analysed individually by each student in the first class of each Curricular Unit, and later negotiated in the class, where new hypotheses may even be proposed.

This large group decision allows all the students to feel more committed to their academic performance, accurately recognizing what is expected to be achieved throughout the Curricular Unit and, on the other hand, how data will be collected that allows the teacher to analyse the knowledge obtained.

### 3.3 Attribution of roles to each element of the group

This strategy does not take on the purpose of identifying the person responsible for solving the situation/problem presented to the group, since everyone must be involved in the activity, feeling responsible for solving it. However, each participant is given extra responsibility. This function is randomly assigned, since the group's choice of functions is usually based on skills, not stimulating those with less competence (Grabe & Kaplan, 1997). In this way, it allows all the students to, at some moment, carry out distinct functions, since the roles circulate within the group. These can include, for example: mediation of the discussion within the group in order to stimulate everyone's participation and ensure that the various elements are understanding and accompanying the task; the recording of the conclusions reached by the group, for example, through the creation of a PowerPoint presentation; the control of the time it takes to carry out the task; a group spokesperson who presents to the class the conclusions previously identified; a comment regarding the work developed by another group; among others.

### 3.4 Specific activities

Throughout the classes of two Curricular Units taught at ESECS (Polytechnic of Leiria) several activities were carried out that followed the principles and strategies described above. In order to present the activities in a summarized way, Table 1 was created, which explains the sequence of actions developed in one.

**Table 1** - Examples of active learning activities for collaborative work

Activity	Typology of the group	Sequence of actions to be developed
Questioning	Pairs	1st – Each student reads and explores an article autonomously; 2nd – Based on the contents of the article, the student elaborates a question and its respective answer (on separate sheets); 3rd – Each student is randomly assigned a partner; 4th – The students/partner exchange the questions they drew up and each one should respond to the question they were given, autonomously; 5th – The students join their partners, compare their answers and create a new answer that gathers the contents of both, seeking to create a text that is as explicit and complete as possible; 6th – The answer created may be subject to evaluation by the teacher and/or shared with the class through the Moodle platform.
Brainstorming/ Conceptual map	Groups of 3 to 5 elements	1st – Each group is given an A3 sheet and a coloured pen; 2nd – Each group writes a theme/concept indicated by the teacher in the centre of the sheet; 3rd – In the case of it being a new theme, they write words/expressions that they know and that have characteristics associated to that theme. If the theme has already been explored, they build a conceptual network/map; 4th – They pass the sheet to the group next to them who should write more words/ ideas or eliminate some that do not seem correct to them; 5th – The sheets circulates until the first sheet reaches the initial groups again; 6th – If the theme is new, the sheet is saved and returned after its exploration to complete the information. If it is a theme that has already been explored, the group may deepen their knowledge through research that allows them to complement the conceptual map.

Activity	Typology of the group	Sequence of actions to be developed
Group exploration of scientific articles	Groups of 3 to 5 elements	1st - Each student is assigned a number based on the number of articles to be explored; 2nd - The article is read and explored individually; 3rd - In the following class, the students join together according to the text that they had to explore to discuss its content and clarify possible doubts, first among colleagues, then with the teacher; 4th - The conclusions / summaries of the texts can be presented orally to the class or another type of exercise can be done to verify the knowledge, for example, the classification of statements as True / False, using excerpts from the texts to justify the answers given.
Debates	Class	1st - A controversial theme is introduced to the class, which is not consensual in the scientific community and that relates to the area of the course/ future profession; 2nd - The class is divided in two groups by the teacher, in which one group will assume a favourable position and the other an unfavourable one, seeking to present the arguments that justify these; 3rd - The position of each group is inverted; 4th - . Students autonomously carry out research to deepen their knowledge on the subject and prepare the debate; 5th - Each student should take on a position regarding the initial question, according to what seems more correct to them, and then joins the corresponding group; 6th - The debate takes place based on the arguments duly substantiated in the research previously carried out.

### 3.5 Summary of results

The options taken throughout the implementation process of the strategies mentioned were always accompanied by a reflexive and critical process on the part of the teacher/researcher who was adjusting the practices according to the qualitative feedback given by the students after each class. From the analysis of the records made, it can be seen that the students were showing themselves positively in relation to the strategies used, denoting changes in their involvement in class, namely through:

- i) a reduction in the number of absences;
- ii) a greater interest in the contents developed;
- iii) a greater participation in the tasks;
- iv) a greater autonomy and proactivity in problem solving;
- v) an increased willingness and ease in managing group work;
- vi) a greater capacity for reflection and critical thinking.

On the other hand, in comparison to the previous academic year, the students' final marks in the Curricular Units improved, and the same happened in the points given in the pedagogical questionnaires applied at the end of the semester, namely in the categories 'articulation of the various components of the C.U. (theoretical and practical)'; 'adequacy of material and bibliography' and 'adequacy of the methods and evaluation criteria'.

## CONCLUSIONS

The implementation of strategies focused on students, which translate into active, effective and long-lasting learning, should be a reality in Higher Education institutions. The lack of adequate pedagogical planning that includes a selection of this type of activities can generate a high level of academic failure or abandonment of the trainees and even a demotivation of the teachers due to the confrontation with this reality.

Although the results presented cannot be generalized, because they come from data collected in a very specific context, it is believed that the sharing of suggestions on how discussion, clarification of ideas, and evaluation of others' ideas can contribute to the reflection on pedagogical practices. Also, the consequent adoption of new strategies can enhance the quality of higher education, considering their capital gains for students.

Similar conclusions are identified in the literature, which recognize that students learn more and better when they are involved in group activities that stimulate their critical and creative sense, feeling more satisfied with their academic path and less likely to give up or drop out of higher education (Baepler, Walker, & Driessen, 2014; Barkley, Cross, & Major, 2005; Burke, 2011; Hung, 2015; Mandel, 2003).

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